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MARYLAND FISHERIES

PUBLISHED BY CONSERVATION DEPARTMENT OF MARYLAND

No. 14 JANUARY, 1932

CONTENTS

	Page
AMERICAN GAME-FISH PROGRAM	1
THE DRILL MENACES TANGIER SOUND	11
PACKER PREFERS STATE AS PURCHASER OF SHELLS	13
DISTRIBUTION OF GAME-FISH IN STATE WATERS DURING 1931	14

EDITORIALS

DISTRIBUTION OF SEA FOOD	8
FRESH-WATER FISH CONDITIONS	9
COMMERCIAL FISH PRODUCTION—1931	10

AMERICAN GAME-FISH PROGRAM

By HENRY O'MALLEY, *U. S. Commissioner of Fisheries.*

I HAVE ANTICIPATED that the deliberations and discussions of this organization* would be largely concerned with such problems as the water-fowl crisis, grouse disease, posted lands, etc. I have nevertheless felt that the intrusion of a few remarks concerning fish and fishing would not strike an alien note. This view has been strengthened by my observations that a glance into the average man's gun cabinet generally shows a rod or two, some reels, flies, and other miscellaneous tackle tucked away in some odd corner. In fact, most hunters appear to lead double lives, being reincarnated in the guise of anglers during part of the year. The real sportsman is as much at home on a trout stream or bass lake as he is in a ducking blind or a woodcock cover. I have long felt, with some satisfaction, that the problem of rehabilitating or conserving our game-fishes is somewhat less knotty and complicated than is the corresponding problem in connection with game-birds, and animals. Several facts impel this belief:

First—Game-fish are, in general, more resistant to the encroachments of population and industrialization, or, in other words, civilization, than are game animals and birds. This

*Paper read before American Game Conference.

Oyster Boats Scudding Around Drum Point for Harbor.

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	Page
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AMERICAN GAME-FISH PROGRAM

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I HAVE ANTICIPATED that the deliberations and discussions of this organization* would be largely concerned with such problems as the water-fowl crisis, grouse disease, posted lands, etc. I have nevertheless felt that the intrusion of a few remarks concerning fish and fishing would not strike an alien note. This view has been strengthened by my observations that a glance into the average man's gun cabinet generally shows a rod or two, some reels, flies, and other miscellaneous tackle tucked away in some odd corner. In fact, most hunters appear to lead double lives, being reincarnated in the guise of anglers during part of the year. The real sportsman is as much at home on a trout stream or bass lake as he is in a ducking blind or a woodcock cover. I have long felt, with some satisfaction, that the problem of rehabilitating or conserving our game-fishes is somewhat less knotty and complicated than is the corresponding problem in connection with game-birds, and animals. Several facts impel this belief:

First—Game-fish are, in general, more resistant to the encroachments of population and industrialization, or, in other words, civilization, than are game animals and birds. This

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may be due to a certain broadmindedness and tolerance on the part of fish to human weaknesses. Granting them their birthright of clean water, unsullied by excess domestic or industrial pollution, they will exist quite happily in the heart of civilization. The town of Bellefonte, Pennsylvania, advertises widely the clan of trout which are a great source of attraction in a stream flowing through the heart of the community. It would be a foolhardy sportsman indeed who would attempt to catch one of these; nevertheless, their presence shows that municipal angling would be a reality in that town should it be desired.

Second—We can propagate and distribute under artificial or semi-artificial conditions game-fish much more extensively than my present knowledge leads me to believe can be done with game animals and birds. The methods and procedures are standardized, and the production of increased numbers is merely contingent upon the extraction of increased funds from the pockets of the sportsmen. The production of tens of millions of hatchery fish, of course, does not completely solve the problem of producing hundreds of thousands of satisfied anglers, but nevertheless it is one feature of a complex problem which is satisfactorily solved.

Third—The public does not face the same danger of being barred from desirable fishing waters that it does from the best game cover. I am fully cognizant of the fact that there are many miles of closed waters, particularly trout streams and smaller ponds in which the public can not wet a line without talking it over afterwards with a private warden. Nevertheless there is a much more extensive mileage, including larger lakes and rivers throughout the country, from which the public can never be barred unless our existing systems of riparian ownership are markedly modified. Possibly the cream of some of the smaller waters will ultimately be removed from the category of public fishing ground unless some plan such as Senator Walcott pioneered in Connecticut is applied, but there will be left a tremendous mileage and acreage capable of producing and maintaining adequate fishing if wisely administered by the public agencies responsible for wildlife resources. This phrase, "wisely administered," really tips off the need of intelligence and foresight in planning and carrying out the husbandry of game-fish resources.

Your president has requested me to cover this ground by speaking on America's game-fish program. The present is an era of programs. A multitude of agencies, from Soviet Rus-

sia down, have formulated, and are working under, varied programs looking to the realization of many and diverse objects. These programs generally comprise the setting up of different objectives to be accomplished over a period of years, and I am glad to say that the Bureau of Fisheries has been in on the ground floor in such an undertaking and is now about midway in a five-year program looking toward the fullest discharge of the Federal Government's duties toward the game-fish and commercial species of the country.

Briefly reviewing, there was approved in May, 1930, an act authorizing the appropriations of funds for some 30 new hatcheries, and further authorizing additional appropriations, in annual increments, for five years, covering other activities of the Bureau which are more or less directly connected with the welfare of game-fish. It is, of course, a satisfaction to any Government official to have the activities and agencies under his direction increased and expanded. If his ministry covers greatly increased fields he undoubtedly feels in his inner being that he is an individual of some importance or, in other words, a big fish in a big pool. However, it is a greater source of satisfaction that this extensive program contemplates other features besides the virtual doubling of the Bureau's hatchery facilities. The program contemplates studies and investigations with the object of putting the output of the old and new hatcheries to better use. After all, good fishing is based upon two factors—fish, and the waters in which they must exist. Desirable waters which have been fished out mean a disgruntled angler. Poor waters deficient in food, with improper temperature conditions, subject to flood, silting, etc., likewise can not be made to produce satisfactory sport in spite of the dumping of wholesale quantities of fry and fingerlings.

Intelligent administration of game-fish requires a knowledge of conditions existing in the waters to be stocked, a knowledge which would indicate not only the species to be planted, but the size and numbers of these species. I am quite ready to admit that this feature is one which has been recognized and given the serious attention of a number of the more progressive states, but from the very nature of our own activities it has been hitherto been largely impossible to familiarize ourselves with all the biological details of the tens of thousands of lakes, brooks, streams, rivers or ponds into which the graduates of our hatcheries go.

As one of the features of our five-year program, we have tackled the hardest part of this program; namely, the classi-

fication of the waters of the public land areas in the West. As a Federal agency the Bureau of Fisheries is plainly responsible for the maintenance of fishing in public domains, such as the national parks, national forests, Federal game refuges, Indian reservations, etc. This feature alone demands a 20-year program instead of a five-year program, but we have made the start by placing in the field several parties to survey selected areas in the national forests and set up standards to which our hatchery men can adhere in allocating fish. It should be further added that in this work the Forest Service has expressed the keenest interest and has cooperated in a whole-hearted manner. These are not the only types of more or less academic investigations which we have initiated as checks or governors to prevent the hatchery activities from running wild. The program provided for an experimental trout and bass hatchery in Maryland and West Virginia, and we are now completing construction of the first phase of this development. At this point investigators will conduct controlled experiments in feeding trout and bass, in the selective breeding of brook and rainbow trout, in the diagnosis, isolation and control of those numerous diseases which give the trout themselves that pale, anemic look and give the trout culturist headaches and a bad taste in the mouth. These experiments, which are a continuation and amplification of those initiated several years ago at one of the Bureau's Vermont stations, will be an effort to rationalize and to improve the efficiency of fish-cultural technique. In other words, to improve the methods of aquiculture along the same lines, and to the same extent, that have given agriculture its present pressing problem of overproduction. However, if the present attitude of my angling friends is any criterion, the possibility of an overproduction of game-fish is extremely remote.

We have added several capable scientists to our personnel whose sole duties will be in connection with these fish-cultural and aquicultural investigations. When all is said and done, however, there is little advantage in having extensive knowledge on how to do things unless there are provided facilities for doing them—in this case, the hatcheries. The program, as I have stated, contemplates some 30 new hatcheries very largely devoted to game-fish production. In fact, there is no entirely new hatchery which will operate exclusively on commercial forms. Of course, a great increase in the production of fish will necessitate the provision of facilities for handling them.

The program, therefore, includes two of those piscatorial

Pullmans—the fish cars—which the Bureau uses for transporting fish on long hauls. During formulation of this program the Bureau recommended the establishment of the hatcheries in sections where there is an existing gap in our distribution set-up. We have endeavored to place the new plants so that the fish will be produced in close proximity to the points where they are in greatest demand. Of these new establishments work is now underway at five, located in West Virginia, Colorado, New Mexico, Louisiana, and Tennessee. In addition, sites have been acquired, or are being acquired, in Wisconsin, Idaho, Indiana, Pennsylvania, and Montana. Some of the first mentioned group will begin production during the coming season and add their quota to the Bureau's distribution totals. Whether or not the grim necessity for curtailment in Government expenditures will result in a deferment of the uncompleted portion of this program I can not now state. However, if the plan is pushed through to its completion, and the resources and facilities of the Bureau virtually double as far as game-fish production is concerned, there will still be a long way to go in realizing aspirations for the ultimate development of this wildlife resource. The millennium of the angler is still around the same corner behind which prosperity must be lurking, and all of the advances made by the Federal Government and by the state will fall short unless the sportsmen themselves enter into the picture. With the exception of a few of the Eastern States, hatcheries are still turning out an unfinished product in the shape of small, immature fish. There is a considerable lag between the planting of a fish from a Federal or state hatchery and the catching of this fish as a legal trophy. Sportsmen can short-circuit this gap by taking upon themselves the responsibility of putting the finishing touches on the hatchery fingerlings and rearing them to legal size.

The fish nursery system, whereby sportsmen's groups operate rearing pools for trout and other varieties, is well established under both State and Federal auspices. This system, however, is at the present time taking care of only a relatively small proportion of the total hatchery output, and if all fishermen want all of their fish distributed at frying-pan size they themselves must accept the responsibility of providing the rations and protection which make big ones out of little ones. Even after the sportsmen's organizations have accomplished this purpose there is still something lacking if the streams are not kept in decent condition to receive the young hopefuls. It goes without saying that grossly polluted waters are a menace

to the fish and a reproach to the fishermen. Probably the greatest stake in clean water is that of public health, but the interests of the angler are secondary only to the public-health feature.

I am not here to initiate a technical discussion of pollution, but simply to point out that it is as much a part of the fish conservation problem as is the operation of hatcheries or the passage of sane laws and the appointment of sincere wardens to enforce them. There is developing a movement for the improvement of conditions, especially in trout streams, by the construction of dams, etc., or, in fact, by any means which brings a stream back to those conditions which trout prefer. It is quite possible that many sportsmen's groups can do considerable toward improving their local fishing by spending a small amount of money and a larger amount of their own personal labor in working on the stream itself. The State of Michigan is developing this work, as well as several private individuals, and it is claimed that intelligent stream-improvement work has resulted in immediate improvement of fishing without the addition of any stocked fish whatever.

It is appalling to consider the many factors which must be given thought in working toward a return of the fishing conditions of 50 years ago. Reforestation, leveling water discharges, and keeping temperatures down, must be considered. Agriculture and its relationship to erosion and the destruction of streams must not be put out of mind. Hydro-electric power, with its dams decorated with fishways which probably have never been explored by a fish, is another factor. To go into each of these angles thoroughly and give it the consideration it deserves would make me the concluding speaker of the afternoon. I have no desire for this honor and have therefore merely listed these multiple phases with the purpose of giving you an idea why the fisheries problems are not solved overnight. These are technical questions to be solved by experts on the basis of observations, studies and investigations. Experts are a fairly expensive luxury, but if they are the only means of accomplishing the desired purpose, namely, the writing of an insurance policy for getting fish, the sportsmen should not renege on the payment of the premiums. We can not guarantee that these problems will be solved to your 100% satisfaction. We can guarantee, however, that if no effort is made to solve them along the lines I have mentioned, public fishing in America, at least in a large part of the country, will become another one of grandfather's favorite anecdotes and entirely

lose its significance as a vital force in the recreational set-up of the country. There is no particular cause for alarm, but as yet there is not a great deal of cause for congratulations, either, on the part of State and Federal conservationists, or the sportsmen themselves. I believe we are holding our own, but with more and better highways, more leisure, more automobiles, and even more population, the scale will soon be swayed the other way unless efforts are redoubled.

I intend to offer no eulogy on angling. It needs none. I merely want to say that in coordination and, to a considerable degree, correlation with your efforts to provide game-animals and game-birds for present and future generations, other agencies, private, State, and Federal, are working along similar lines with similar objectives in the hope that a poor bag of game may be compensated for by a full creel of fish.

LINE OF PROHIBITED ZONE FOR CATCHING OYSTERS IN BACK CREEK CHANGED

According to a ruling of the State Department of Health, dated January 11, a slight change in the restriction line in Back Creek, so that the line may be better defined and more easily discerned by oystermen, was made. This line now extends from Wroten's Point (Lusby Point), approximately due east to Hellen's water fence.

Oystermen in the Solomons Island district have been apprised of the change by the local inspector.

MARYLAND FISHERIES

PUBLISHED BIMONTHLY BY CONSERVATION DEPARTMENT,
SWEPSON EARLE, Commissioner.

No. 14

JANUARY, 1932

DISTRIBUTION OF SEA FOOD

A RECENT PERUSAL of the inspection tax records of the Department reveals the very interesting fact that the oyster production from the beginning of the current oyster season to the close of the year 1931 shows an increase of 150,000 bushels over the same period of 1930. This is extremely gratifying in view of the fact that the Potomac River was closed to dredging and Honga River and part of the Great Choptank were closed to scraping.

The planting by the State of large quantities of oyster shells on the depleted bars yearly since 1928, coupled with excellent catches of spat which occurred during the past two years is, we believe, responsible for the increase in production. Particularly is this true in the tributary waters.

If the balance of the winter does not become too mild, it is likely that the increase this season will amount to a quarter of a million bushels by April 25, and it is not too much to expect that the 1932-33 season will follow by a further increase. From then on, with a careful application of conservation measures and an increased utilization of the State's barren areas by watermen and other citizens for oyster planting, we may expect to stabilize the production.

Now that the Department can feel that depletion in the oyster, as well as the crab supply, has been stemmed, and these valuable aquatic resources are on the up-grade, it is time to think of assisting the fisherman and packer in the proper distribution of them, so that there may be no overproduction and consequent waste of the water crops of Maryland.

The United States Bureau of Fisheries calculates that 15 pounds of sea food are consumed annually per capita in the United States. Within a radius of 150 miles of the State of Maryland there are approximately 10,000,000 people. The

consumption of sea food in this area is not five pounds per capita. There is every reason to believe that the proper distribution and more publicity on the value and benefits of water products as food for the people will greatly increase the demand for sea food.

The crab industry is one that has increased rapidly since 1926, when the State of Virginia first passed legislation to protect the female crab bearing the egg sponge in Virginia waters. The production in Maryland at that time was not more than 35,000,000 crabs. In 1931, from statistics gathered by the Sea-food Auditor, we find that 92,000,000 crabs were taken and marketed from Maryland waters, and it is likely that many millions more could have been taken had the demand justified it.

Government statistics show that 63 per cent of the crab meat used in the United States is imported. Surely our crabs could supply some of this demand! Facilities for shipping crabs have been so improved during the past decade that soft crabs are shipped from Crisfield to California with perfect assurance of their arriving alive and in good condition. The canning of soft crabs will certainly be introduced, and the shipping of crab meat to all sections of the country will increase the demand for this valuable product of the Chesapeake.

FRESH-WATER FISH CONDITIONS

THE HEAVY RAINFALL since the first of January has caused the fresh-water streams of the State to resume practically their normal flow. In Garrett County, where rainfall has been fairly abundant during the entire winter, streams did not suffer so much as those nearer to the Bay, and the Department was enabled to distribute trout from the Bear Creek hatchery during the latter part of December.

On January 14, the Conservation Commissioner, in company with certain members of the Izaak Walton League of Hagerstown, inspected the trout which have been raised at the State's rearing station located at Cushwa Springs—some 8,000 fish which average 10 to 12 inches in length. Arrangements will be made for the distribution of these fish in Washington County and other counties with suitable trout streams in the near future, and these fish should assure the anglers excellent sport when the season opens April 1.

The increased flow of water in Western Maryland streams, due to the recent rainfall, has also cleaned them of much sediment and pollution which accumulate when streams are low. This will materially help the Potomac River which suffers severely both from industrial and domestic pollution in certain sections of its great length.

Bass which were grown in a portion of the C. & O. Canal, under the supervision of the Williamsport Chapter of the Izaak Walton League, and those raised in the new pond at Cushwa Springs had attained a size of from four to eight inches when distributed recently. Western Maryland anglers are enthusiastic over bass fishing (particularly the smallmouth variety), and the Conservation Department will bend every effort to increase the output of bass from the State's nursery ponds provided for that purpose.

The unusual weather temperatures prevailing during the fall and early winter have started white and yellow perch "to run" in Severn River, and every indication points to a repetition of last year's experience, when hatchery work had to be commenced a month earlier than usual, and the eggs which were taken had evidently ripened prematurely, and being improperly fertilized, did not hatch successfully. The yellow-perch production, which has run as high as 600,000,000 fry, showed a fall-off of two-thirds under the previous year.

COMMERCIAL FISH PRODUCTION—1931

EXAMINATION of the Sea-food Auditor's report for the year 1931 reveals the fact that 4,000,000 pounds of fish, excluding shad and herring, were marketed from the waters of the Chesapeake Bay and its tributaries in Maryland. Roughly about one-half of these fish were shipped to Baltimore and the remaining half, coming from both the Eastern and Western Shores, were marketed in Washington, Philadelphia, and New York.

During the run of shad, the easterly weather which prevailed at that time drove the fish into the Potomac River, where they were quite plentiful. The pound-nets along the tributary waters of the Eastern Shore, where the State's hatcheries are located, were not as successful as usual and fewer eggs were consequently obtained. The Government shad hatchery located in Potomac River had a very successful season, however.

At one time in the Potomac, shad were so plentiful as to cause a glut and only averaged the fishermen a little over 7c. a pound. The Department also noted considerable waste of roe, due to the fact that the spawning shad were overripe when caught and the eggs were not utilized by either the State or Government hatcheries.

It is hoped that the coming spring weather conditions will be more favorable for this branch of the State's work, and that a better distribution of fish will be had on both sides of the Bay.

The herring fishery also showed a marked decrease in 1931 under the previous year. Weather conditions may also have had an effect on the run of these fish.

THE DRILL MENACES TANGIER SOUND

AN EXAMINATION of the natural oyster rocks in Tangier Sound a short time ago by a member of the Department's staff disclosed a serious situation on many of the bars with regard to the oyster drill. Young oysters in great quantities caught on the shells planted in the Sound from Kedges Straits to Holland Straits during the past two years, and it looked as though the Sound would once more return to prominence as a producing area of fine oysters. From 80 to 90 per cent of these young oysters, however, were found to have been bored by drills, which were present in great numbers.

The Long Island oyster-producing areas in Great South Bay have also been threatened by the drill, but according to an article appearing in the December issue of *Fishing*, the result of an interview with Joseph B. Glancy, head of the research department of the Bluepoints Oyster Company, of West Sayville, the situation is of no unusual concern. Mr. Glancy states: "Almost the entire crop is marketed from privately owned beds, and the owners, through years of bitter experience, have instituted methods of cultivation, chiefly judicious transplantation, which keeps the drill menace within reasonable bounds."

It was thought by the Department's investigator that the drought of the past two years, which greatly heightened the salinity of the water in Chesapeake Bay, was responsible for the presence of the drills in such numbers in Tangier Sound, and this view coincides with the statement of Mr. Glancy, who

says: "Incidentally, the peculiar water conditions favorable to the drill seem also beneficial to the oyster, because this year bluepoints all over the Bay have grown remarkably well and are unusually fat. Thus the situation is not without fortunate aspects."

"New Jersey planters in Delaware Bay," the article continues, "are harassed by drills to the extent of $1,000,000 annually. Because of this, they are offering a bounty of 50 cents per quart of live drills taken by the crews on the water boats. The drills cannot bore quickly through the shells of the older oysters and always choose, if possible, to eat the thin-shelled 'set.' J. Richard Nelson, New Jersey oyster biologist, has utilized this fact in an experiment on drill eradication. Nelson has devised a drill trap which is nothing more than a wire mesh bag filled with very young oysters which are placed in large numbers on the oyster beds and hauled up every few days and the adhering drills shaken out.

"Oyster growers interested in the famous Hampton Bar oyster beds in Virginia are sore troubled during a series of years by drills. However, their salvation lies in the fact that about once every decade the spring freshets pour down the James, York and Elizabeth Rivers and the salinity of the waters over the oyster grounds becomes so lowered that the drills die off.

"The Bluepoints Company and other growers control much of the under-water land off the mainland in Great South Bay. These companies regularly transplant their oysters while they are growing to maturity, shaking the adhering drills from the shell-fish, which is about the only effective means yet found for getting rid of them. The local growers are constantly on the alert, and if a particular area is found to be infested with drills, the oysters are removed and planted elsewhere.

"Millions of dollars worth of oysters are destroyed every year by oyster drills. They belong to the snail family of creeping gastropods and seldom attain a length of more than one inch. However, for a salt-water organism the oyster drill is usually free from natural enemies and its hard, crinkled shell affords it an almost impregnable protection. Mr. Glancy took an oyster drill, one of several with which he was experimenting, placed it on the floor of his laboratory, and jumped up and down upon it. The treatment failed to harm the drill in the slightest.

"While the drill has few natural enemies, the oyster is so

sore beset that out of 100,000,000 spawn from a normal female oyster, the shippers may be fortunate, four or five years later, to get one or two oysters of market size. Researches are constantly being made by Mr. Glancy and his staff, in the attempt to find the most advantageous conditions for the oyster, the most effective methods of combating its enemies, and means of putting an even finer product on the market.

"Drills begin to spawn when the temperature of the water reaches 70° F., and the spawning season lasts in Great South Bay from June to September, each female drill laying about 25 eggs in approximately eight tough leathery cases firmly attached to oysters or other objects above the bottom. The eggs hatch in from 35 to 40 days and immediately become dangerous enemies to the small oyster 'spat.'

"The drill has a rasping tongue or radula which may roughly be described as a narrow belt covered on its outer surface with rows of sharp teeth composed of hard glass with which a small round hole is bored through the shell of the oyster. Thus an oysterman always has ample evidence of what caused the mortality. After the hole is made the drill withdraws the radula and inserts the proboscis, which pours digestive ferments into the oyster, the products of which are then withdrawn and consumed. A single drill can eat from 30 to 200 oysters per season."

PACKER PREFERS STATE AS PURCHASER OF SHELLS

Mr. C. S. Vansant, an oyster packer at Rock Hall, Md., after stating that it is about time to buy shells and inquiring what price the State is offering, follows it up in his letter, which is in part as follows:

> "I would rather contract with the State for planting purposes than sell my shells elsewhere. I am now ready to contract if the State can use them. We are encouraged more each day with shells which have been planted. I have had the tongers several times bring me samples of shells which had been planted and they make a showing of from one to seven small oysters to a shell. This looks very encouraging."

DISTRIBUTION OF GAME-FISH IN STATE WATERS DURING 1931

County and Name of Stream	*Species*	*Size*	*Number*
ALLEGANY			
Town Creek	Small-Mouth Bass	3	1,400
Potomac River	Small-Mouth Bass	3	700
Savage River	Small-Mouth Bass	3	350
Total			2,450
ANNE ARUNDEL			
Otter Lake	Large-Mouth Bass	5	650
Patuxent River	Large-Mouth Bass	4	200
Otter Lake	Crappie	4	600
Patuxent River	Crappie	4	300
Adams Branch	Brook Trout	*	30
Total			1,780
BALTIMORE			
Gunpowder River	Yellow Perch	4	600
Western Run	Brown Trout	*	497
Evans Run	Brown Trout	*	25
North Run	Brown Trout	*	20
Chattolanee Run	Brown Trout	*	20
Jones Falls	Brown Trout	*	70
North Branch Patapsco	Brown Trout	*	25
Delaware Branch	Brown Trout	*	25
Beaver Dam Run	Brown Trout	*	35
Beaver Dam Run	Brook Trout	*	35
Snowden's Run	Brook Trout	*	30
Sweat Run	Brook Trout	*	20
Gunpowder River	Small-Mouth Bass	3	900
Bird River	Large-Mouth Bass	4	660
Dundee River	Large-Mouth Bass	4	660
Saltpetre Creek	Large-Mouth Bass	4	660
Seneca Creek	Large-Mouth Bass	4	660
Frog Mortar Creek	Large-Mouth Bass	4	660
Dark Head Creek	Large-Mouth Bass	4	760
Hog Pen Creek	Large-Mouth Bass	4	330
Norman Creek	Large-Mouth Bass	4	330
Sue Creek	Large-Mouth Bass	4	660
Fulton Pond	Large-Mouth Bass	4	150
Gunpowder River	Large-Mouth Bass	4	150
Lake Waterford	Large-Mouth Bass	4	300
Fulton Pond	Crappie	3	300
Gunpowder River	Crappie	3	300
Middle River	Crappie	3	8,000
Total			16,882
CAROLINE			
Dean's Pond	Large-Mouth Bass	5	600
Greensboro Pond	Crappie	4	3,000
Dean's Pond	Crappie	4	3,000
Total			6,600
CARROLL			
Beaver Creek	Brown Trout	*	200
Monocacy River	Large-Mouth Bass	5	450
Patapsco River	Small-Mouth Bass	4	1,600
East Patapsco River	Smal-Mouth Bass	3	600
Monocacy River	Crappie	4	3,000
Total			5,850
CECIL			
Conowingo Lake	Crappie	4	6,000
Conowingo Lake	Large-Mouth Bass	5	2,000
Marley Lake	Crappie	4	3,000
Hines Run	Brook Trout	*	40
Total			11,040

* Indicates adult fish. Numbers indicate size according to inches.

County and Name of Stream	*Species*	*Size*	*Number*
DORCHESTER			
Linchester Pond	Crappie	4	400
Hunting Creek	Crappie	4	400
Merrick's Pond	Crappie	4	600
Transquakin River	Crappie	3	1,400
Galveston Pond	Crappie	4	1,200
Linchester Pond	Large-Mouth Bass	4-6	400
Hunting Creek	Large-Mouth Bass	4-6	600
Merrick's Pond	Large-Mouth Bass	4-6	1,000
Total			6,000
FREDERICK			
Hunting Creek	Brook Trout	*	1,000
Fishing Creek	Brook Trout	*	2,310
Middle Creek	Crappie	4	12,000
Linganore Creek	Crappie	4	5,000
Fishing Creek	Small-Mouth Bass	3	1,000
Hunting Creek	Small-Mouth Bass	3	200
Total			21,510
GARRETT			
Deep Creek Lake	Pike	6-12	180
Deep Creek Lake	Pike	fry	600,000
Savage River	Brook Trout	*	540
Broad Ford	Brook Trout	*	75
Glade Run	Brook Trout	*	425
Herrington Creek	Brook Trout	*	160
Bear Creek	Brook Trout	*	2,325
Little Youghiogheny River	Brook Trout	*	210
Trout Run	Brook Trout	*	75
Cherry Creek	Brook Trout	*	225
South Cherry Creek	Brook Trout	*	75
Sang Run	Brook Trout	*	150
Rock Lick	Brook Trout	*	60
Gap Run	Brook Trout	*	60
Total			604,560
HARFORD			
Deer Creek	Small-Mouth Bass	3-4	2,000
Cattail Creek	Small-Mouth Bass	3	300
Total			2,300
HOWARD			
Cattail Creek	Crappie	4	1,100
KENT			
Chestertown Club Lake	Crappie	3	2,000
Chestertown Club Lake	Crappie	*	126
Chester River	Crappie	4	6,000
Total			8,126
MONTGOMERY			
Patuxent River	Small-Mouth Bass	3-4	410
QUEEN ANNE'S			
Island Creek	Crappie	4	4,000
Crouch's Pond	Crappie	4	800
Island Creek	Large-Mouth Bass	4-6	800
Crouch's Pond	Large-Mouth Bass	4-6	600
Total			6,200
WASHINGTON			
Maz Hyett's Stream	Brook Trout	*	43
Kemp's Mill Stream	Brook Trout	*	58
Shawman Run	Brook Trout	*	36
Crystal Cave Run	Brook Trout	*	44
Daub's Run	Brook Trout	*	28
Simple's Run	Brook Trout	*	525
Marsh Run	Brook Trout	*	28
Lane Run	Brook Trout	*	108
St. James Run	Brook Trout	*	56
Beaver Creek	Brook Trout	*	35

County and Name of Stream	*Species*	*Size*	*Number*
WASHINGTON—Continued			
Young Run	Brook Trout	*	500
Renche's Run	Brook Trout	*	180
Fort Head Run	Brook Trout	*	60
Conococheague	Small-Mouth Bass	4	400
Potomac River	Small-Mouth Bass	4	700
Big Pool	Crappie	4	1,400
Little Pool	Crappie	4	2,700
Little Pool	Crappie	*	150
Total			7,051
WICOMICO			
Parker's Pond	Large-Mouth Bass	4-6	1,000
Shoemaker's Pond	Large-Mouth Bass	4-6	1,000
Appios Pond	Large-Mouth Bass	4-6	1,200
Appios Pond	Crappie	4	1,200
Parker's Pond	Crappie	4	1,000
Shoemaker's Pond	Crappie	4	1,000
Total			6,400
WORCESTER			
Pocomoke River	Large-Mouth Bass	4-6	800
Pocomoke River	Crappie	4	1,800
Total			2,600